sidered is, that the growth of the animal, corresponding to a given increment in the angle of the generating curve, will always be proportional to the bulk it has then attained: and if the physical vital energies of the animal be proportional to its actual bulk, its growth, in any given time, will be proportional to its growth up to that time. Hence the whole angle of revolution of the curve generating the shell will be proportional to the whole corresponding time of the animal's growth; and therefore, the whole number of whorls and parts of whorls will, at any period, be proportional to its age.

The form of the molluscous animal remaining always similar to itself, the surface of the organ by which it deposits its shell will vary as the square of the linear dimensions; but as the deposition of its shell must vary as the cube of the same dimensions, there must be an increased functional activity of the organ, varying as the simple linear dimensions.

Since to each species of shell there must correspond a particular number expressing the ratio of the geometrical progression of the similar successive linear dimensions of the whorls; and since the constant angle of the particular logarithmic spiral, which is affected by that species of shell, is deducible from this number, the author considers that, connected as the form of the shell is with the circumstances of the animal's growth and the manner of its existence, this number, or the angle of the particular spiral, determinable as it is in each case by actual measurement, may be available for the purposes of classification, and may suggest relations by which, eventually, they may become linked with characteristic forms, and modes of molluscous existence.

The concluding portion of the paper contains a mathematical discussion of certain geometrical and mechanical elements of a conchoidal surface. These are, the extent of the surface itself; the volume contained by it; the centre of gravity of the surface, and also of the volume, in each case, when the generating figure revolves about a fixed axis without any other motion, and also when it has, besides this, a motion of translation in the direction of that axis; and, lastly, the angle of the spiral. The author states that his object in this inquiry is the application of these elements to a discussion of the hydraulic theory of shells. The constant angle of the spiral, which each particular species affects, being connected by a necessary relation with the economy of the material of the habitation of each, with its stability, and the condition of its buoyancy, it is therefore necessary to determine the value of this angle.

"On the relative attractions of Sulphuric Acid for water, under particular circumstances: with suggestions of means of improving the ordinary process of manufacturing Sulphuric Acid." By Henry Hugh Watson, Esq., Corresponding Member of the Manchester Philosophical Society. Communicated by John Dalton, D.C.L., F.R.S., &c.

The object of the inquiry detailed in the present paper is to determine at what degree of concentration the affinity of sulphuric

acid for aqueous vapour is equal to that of anhydrous space for the same vapour at given temperatures. It has long been known that concentrated sulphuric acid abstracts moisture from the atmosphere, but the amount and the rate of this absorption have never been ascertained with accuracy; and consequently, in applying this acid to purposes of exsiccation, the experimenter has often been at a loss to know whether the acid was sufficiently strong to render the space in which it was confined perfectly anhydrous. By placing portions of the acid, previously weighed, and diluted with known quantities of water, under the receiver of an air-pump, with equal portions of concentrated acid, of the specific gravity 1·8428, in similar dishes, the author ascertained that the dilute acid could be concentrated to the specific gravity 1·814, at a temperature varying from 65° to 57°: whence he concludes that acid of such strength is capable of drying a vacuum when the temperature does not exceed 57°. By making similar experiments in air, the author compared together the weights lost by ten grains of dilute sulphuric acid of the specific gravity 1·135, at three different periods of the day for six days, taking note of the dew-point and the temperature; and infers that when the affinity of space for vapour, or the evaporating force, is equal to 0·15 of an inch of mercury, it is just able to balance the affinity for water of sulphuric acid of the specific gravity 1·249.

The author next instituted a series of experiments to ascertain whether the evaporation of water from dilute sulphuric acid is capable of being carried on to the same extent in air as in vacuo, and found that the evaporating force of air exerted upon such acid is less than that of a vacuum at the same temperature. He observes that his experiments offer conclusive evidence that the evaporation of water is not owing to the existence of a chemical affinity between the vapour of the liquid and atmospheric air; but thinks that they favour the notion that the obstruction to this process in the open atmosphere is rather owing to the pressure than to the *vis inertiæ* of the particles of air. He is also of opinion that improvements will hereafter arise from this inquiry with regard to the economical management of the process of manufacturing sulphuric acid, which process would be greatly expedited by the regulated admission of steam into the condensing chambers kept at a constant high temperature.

The Society then adjourned over the long vacation to meet again on the 15th of November next.